GUERNSEY DAM
Guernsey State Park
Guernsey vicinity
Platte County
Wyoming

HAER WY-94
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
INTERMOUNTAIN REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
12795 West Alameda Parkway
Denver, CO 80228

HISTORIC AMERICAN ENGINEERING RECORD

GUERNSEY DAM

HAER NO. WY-94

Location: Guernsey Dam is within the Lake Guernsey National Historic Landmark. It is near the community Guernsey, Platte County, Wyoming. The Landmark encompasses Lake Guernsey State Park, parts of which had been previously recognized as a National Register of Historic Places District. The lake is a Bureau of Reclamation impoundment on the North Platte Project.

Significance: Guernsey Dam is regionally important as a storage dam on the North Platte project and as part of the North Platte Project through which it provides both electricity and irrigation water. Guernsey Dam is the second largest structure on the North Platte Project. It was the third structure constructed as part of the project. Water stored in the reservoir is used to generate power at the Guernsey Power Plant. Electrical power is then transferred through four substations and approximately 160 miles of transmission lines. Additionally, the North Platte Project provides water for irrigation to approximately 335,000 acres (http://www.usbr.gov/dataweb/html/ northplatte.html).

Description: The scope of work for this project calls for recording of the upstream face of the dam only:

> The purpose of the documentation is to mitigate adverse effects to the historic appearance of Guernsey Dam (which is a significant feature of Lake Guernsey NHL [48PL101]), that will result from proposed Safety of Dams (SOD) Program exploratory investigations and activities on the upstream side of the dam . . .
>
> During Reclamation's Comprehensives Facility Review of Guernsey Dam in 2004, a depression on the upstream face of the dam alongside the south wall of the north spillway was noted. Subsequently, a recommendation . . . was made to investigate the cause of the depression, and examine existing seepage conditions and potential for piping in this area. In 2005, an Operation and Maintenance (O&M) recommendation . . . was made to determine the depth of deteriorated riprap and the depth to embankment shell material below the existing riprap surface . . . [Bureau of Reclamation 2007:1].

Guernsey Dam is a diaphragm dam. This type of dam is used where the base of the dam is not impervious material. The dam has a clay puddle core extending from 30 feet below the historical river bed through the main embankment to the crest.

The dam (see attached drawing) is 135 feet high with a 940 foot-wide base and a 560 foot-long crest (Autobee 1996). The embankment contains 586,000 cubic yards of material (RCA 1982). These materials were brought by rail to the construction site. Three feet of riprap was placed along the face by construction workers. The riprap was excavated by steam shovel from the face of the canyon bordering the impoundment. At the northern end of the dam, the massive concrete gatehouse sits above a "434,000

pound, 50-by-50 foot Stoney gate for regulation of up to 52,000 cfs of irrigation flow. (This type of roller-mounted gate was invented in Ireland by F.G.M. Stoney in 1883.) The south spillway is a 128-foot long . . . controlled by two 64-by-14.5 foot drum gates" (Autobee 1996).

The pool was designed to contain 73,810 acre-feet of water. Subsequent silting has decreased the size of the pool to less than 45,612 acre-feet of water (RCA 1982).

History: The Sweetwater (North Platte) Project was authorized under the Reclamation Act of 1903. In 1924, a congressional appropriation of $800,000 was designated for construction of the Guernsey Dam. In 1925, the Bureau of Reclamation accepted Utah Construction Company's 1.2 million dollar bid for the construction of the dam.

Under the supervision of F.F. Smith, construction engineer, Guernsey Dam was positioned to take advantage of a canyon known as "The Narrows." The third dam built on the North Platte River as part of the North Platte Project, it was intended to regulate the North Platte River, provide irrigation water, and generate electricity. The location provided scenic and recreational potential that was later developed under an agreement between the Bureau of Reclamation and the Civilian Conservation Corps. The dam and powerhouse were completed on July 13, 1927.

References Cited:

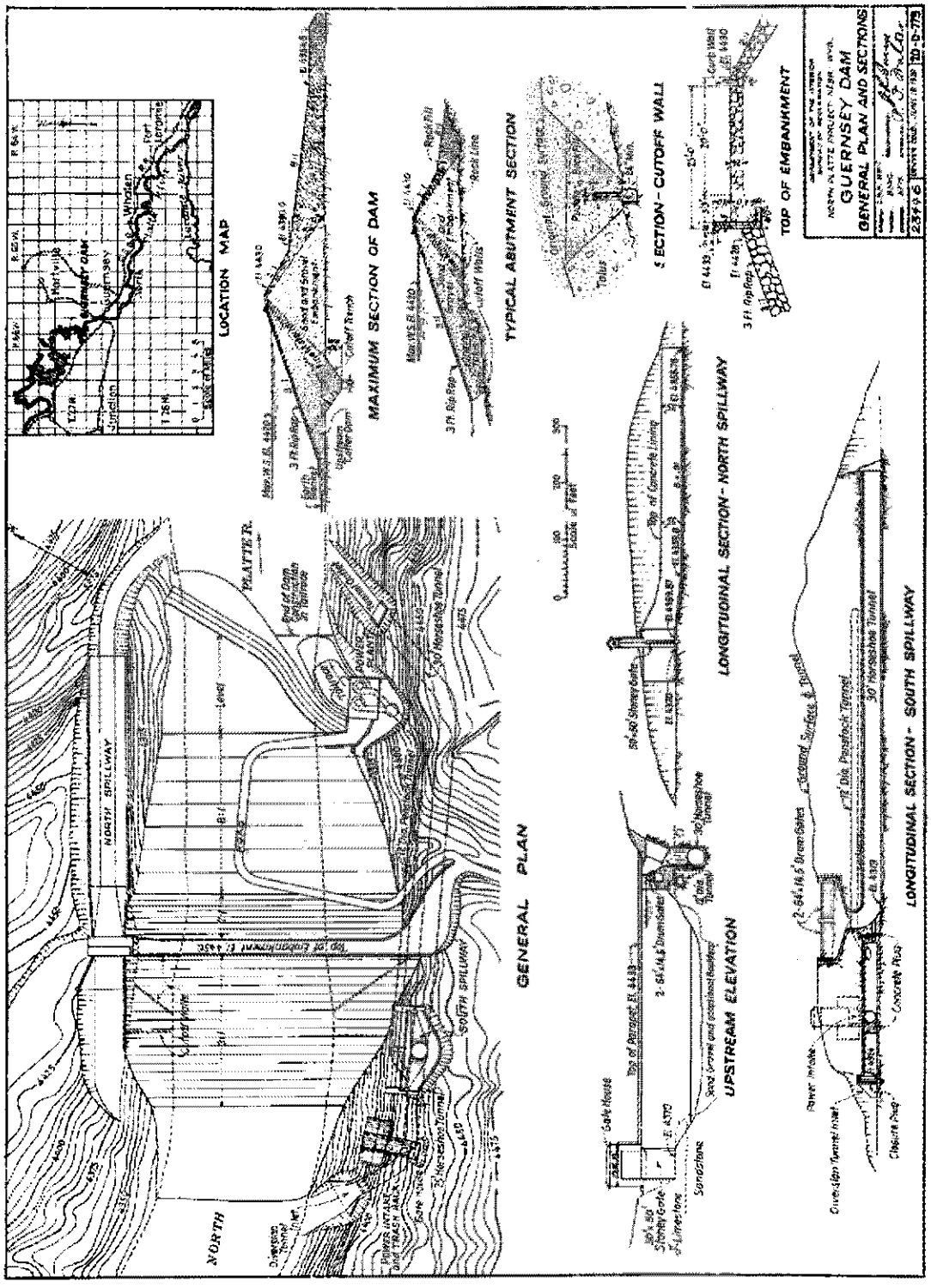
Autobee, Robert
1996 *North Platte Project, Second Draft.* Bureau of Reclamation History Project, Denver, Colorado. http://www.usbr.gov/dataweb/html/noplatte.html

Begley, Susan, and Ethan Carr
1997 *Lake Guernsey State Park National Historic Landmark Nomination.* On file at the National Park Service, Washington, DC.

Bureau of Reclamation
1982 Reservoir Capacity Allocation, Table A-3 in *North Platte Project, Wyoming-Nebraska: Guernsey Reservoir Area-Capacity tables and Curves, Electronic Computer Solution.* Lower Missouri region, Denver, Colorado.

2007 Exploratory Investigations at Guernsey Dam, North Platte Project, Platte County, Wyoming Statement of Work. Ms. on file, Bureau of Reclamation, Great Plains Region, Wyoming Area Office, Safety of Dams Program, Mills, Wyoming.

Historian: Dori M. Penny, LTA, Inc., 2008



A set of 1928 drawings of Guernsey Dam. Originals are on file with the USDI, Bureau of Reclamation, Great Plains Region, Wyoming Area Office, Mills, Wyoming.